

Animal Assisted Intervention for Psychiatric Disorders  
A Meta-Synthesis

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**Abstract**

Animal assisted intervention (AAI), which is an umbrella term for all types of animal therapy, is a therapy method that has been utilized for hundreds of years. Though it has gained more recognition in recent years, research is ongoing. Varied studies have been documented on the effectiveness of AAI as a therapy tool for those who have physical, mental, emotional, or social disabilities. This meta-thesis will introduce varied types of (AAI) and share documented studies and reviews, with the primary focus being on AAI's effectiveness as a therapy tool for those with psychiatric disorders.

## 1. Introduction

### 1.1. Background

Animal Assisted Intervention (AAI) is a form of therapy which involves animals as part of the treatment. The goal of this therapy is to improve a person's health; socially, emotionally, and/or cognitively. An animal's presence has been shown to have positive effects on people by increasing levels of oxytocin and other important anti-stress agents. The presence of an animal can be a reminder that the environment is safe, and can cause positive emotions (Glintborg, C., & Hansen, T. B., 2017).

Throughout history, man has utilized animals for food, clothing, shelter, and tools for survival. The early hunter/gatherer man also believed in the supernatural powers of animals and animal spirits, which may have been suggested as the initial basis for AAI, though this theory is undocumented. Based on Edward Wilson's, "*The Biophilia Hypothesis*", (1984), man also depended on animals' actions to judge if there was safety or threat in the surrounding environment. If the animals were at peace or rest, these were signals to man that the environment was safe and secure. The same is true today. *The Biophilia Hypothesis (1984)* suggests that these signals can give humans feelings of well-being, triggering a state where personal change and healing are possible (Schaefer K, 2002). One of the earliest accounts of animals being utilized for rehabilitation and treatment was in the ninth century. People with disabilities, in Gheel, Belgium, worked with farm animals and learned about their daily living needs (Reynolds, A., 2012). The York\_Retreat, led by William Tuke, in England, had the earliest documented use of AAT for the mentally ill, in the late 18<sup>th</sup> century (Fine, A. H., 2006). In the 1800s, Florence Nightingale

was known to use “animal-companion therapy” for her patients who were sick and disabled (Snyder & Tielsch Goddard, A., & Gilmer, M. J., 2015).

In the 1930s, Sigmund Freud had a dog, named Jofi, that he took with him during his early sessions of psychoanalysis. He noticed that the calm presence of the dog was reassuring to the patients and they were better able to relax and talk to Dr. Freud. It was noted to be more effective with children and adolescents (Brooke, S. L., & Myers, C. E., 2015).

Dr. Boris Levinson was a practicing child psychologist in the 1960s. He found that his young patients had less anxiety and were more open to therapy when Jingles, his dog, was present. He felt that the dog helped him build rapport with his patients and that Jingles was an “extension” in therapeutic milieus. Due to his work with Jingles, Dr Levinson coined the term “pet therapy” in 1964 (Tielsch Goddard, A., & Gilmer, M. J., 2015).

Animal Assisted Intervention can involve varied types of animals. Some are better suited to specified situations or people. Following is a limited list, with descriptions and their possible results.

Equine Assisted Therapy involves trained professionals in partnership with horses. These therapies involve varied activities, from observation to groundwork, driving a cart, and mounted activities. There are varied outcomes expected. One is for the youth to learn to build a partnership and create social connections. They build confidence while discovering personal space, working toward goals, accomplishing self-mastery and striving for personal success. Working with the horses also allows the youth to learn mindfulness. Mindfulness means being present in the “now”; noticing your thoughts, feelings, reflections, and behaviors without imposing judgement or trying

to change them. The mindfulness-based activities with horses is multisensory and allows the youth to increase their sensorimotor integration, awareness of both internal and external environments, and social skills. The horses tend to reflect the youths' demeanor and the youth learns about being respectful, calm, and present (Brooke, S. L., & Myers, C. E., 2015).

Canine Assisted Therapy involves a specially trained dog-handler team that guides goal directed treatment that improves physical, social, emotional, and/or cognitive functioning of the person utilizing the treatment. This treatment is directed by an experienced health or human service professional. This type of therapy may aid with PTSD symptoms, sleep quality, mental wellbeing, social wellbeing, life satisfaction, and decreased medication use (<https://habri.org/research/mental-health>).

Feline Assisted Therapy may be used in a variety of settings and is increasing in popularity. It is recommended for those who cannot interact with large animals, such as horses or dogs, due to fear, disability, or medical conditions. This therapy can be conducted in a variety of settings, including nursing homes, prisons, hospices, hospitals, or schools (Tomaszewska, K., Bomert, I., & Wilkiewicz-Wawro, E., 2017).

Dolphin Assisted Therapy has the added advantage of being in the water, which has been shown to have a therapeutic effect on people with varied types of disabilities. The immersion in water can allow freedom of movement for someone with a physical disability, and also provide a constant surrounding pressure that soothes those who have sensitive nerve endings. The dolphins are joyful and playful and are very responsive to the people in the water. It has been found that

this therapy aids with stress reduction, relaxation, depression reduction, boosting the immune system, endorphin stimulation, recovery enhancement, and pain reduction. These results are from examination of brain wave patterns, psychological testing, blood chemistry, the strength of the immune system, the state of the brain, and in cell make-up (McKinney, A., Dustin, D., & Wolff, R., 2001).

Bird Assisted Therapy is a therapy that can help people with psychological or emotional disabilities. Parrots and other varied species of birds can be empathetic and aware of the emotions around them. They are partial to their people and can sense stress, tension, anger, and distress before these emotions build up. These birds can be trained to use this empathy and awareness to help these people (Siebert, 2016).

Snake Assisted Therapy is utilized for people with bipolar disorder. The snake's cold skin, its weight, and its movement have a massaging effect as it moves over them. This provides the sense of thrill that patients with mania can often crave (HOLDEN, L, 2016).

Smallies Assisted Therapy is a therapy involving small animals, such as gerbils, hamsters, mice, fish, turtles, etc. This has been successful for children with ADHD and Conduct Disorder. The students must be calm and quiet while around the animals, and have to respect the animals and each other, also. The students must also learn how to hold and care for the animals before they can adopt them. They also have to learn how to weigh and measure their animal, mark growth on a chart, and compute feeding requirements. When able to work with the animals, the class attendance is usually up, and students are accomplishing learning tasks that they weren't before (Geist, T., 2011).

Elephant Assisted Therapy is a therapy based in Thailand and it is used primarily for children with Autism and Down Syndrome. The therapy includes preparing the food for the elephants, feeding them, cleaning the area after the elephants were done eating, using a spade and cart to clean up dung, mounting and dismounting a fake elephant, and then a real one. Once the children master getting on the elephant and sitting on its neck, they ride the elephant, with a mahout sitting behind them. They go around in a flat area, until they are comfortable with the movement. Then the elephant goes uphill and downhill. The riding time is about 30 minutes, and they will follow this routine for 8 weeks, 2 times per weekend. The children with Autism have shown improvement in their balance, postural control, sensory integration, and adaptive behavior. It has shown to improve the visual motor integration in children with Down Syndrome (Satiansukpong, N., Pongsaksri, M., & Sasat, D., 2016).

The range of therapies is quite extensive. This paper will be focused on AAI and its effect on psychiatric disorders.

### *1.2. Author's beliefs and experiences*

As a child, we moved, on average, about every 6 weeks, due to my father's work. We were regarded almost as gypsies, though we followed the pipeline, and were called "pipe-liners". Due to our frequent moves, the populations of many of the towns that we moved to were distrustful of our group. It was not unusual for other children to be kept away from us as their parents were distrustful of us, as a whole. (This was my first remembered experience of prejudice, though that is a topic for another paper.) Fortunately, my parents realized the importance of consistent

companionship for me; we always had pets. My dog, cat, bird, and turtle (though they were occasionally replaced when they went “exploring”, as Mom would say) were my true, dependable, and consistent friends. Looking back, I realize that I learned a lot about responsibility due to taking care of my “critter” friends, but they, in turn, made me feel safe, comforted me when I was sad, and gave me a lot of the companionship that I was missing from other children. After my father retired, when I was 14, we moved to our farm in Oklahoma, where I learned about horses and cattle. Through all this exposure to animals, I learned about observing body language, being calm and maintaining that calm, moving smoothly, and being in the moment. Especially with the bigger animals, you had to pay attention to stay safe.

When I suddenly became a single parent of 2 little girls, we again had dogs and cats as they gave us a feeling of security. They warned us of strangers and dangers and protected us on several occasions. They also provided comfort and became confidantes to my daughters when I was unable to be there due to work and/or college, and a sitter just wasn't part of the “family”. The animals became important when one of my girls became very depressed, despondent, and suicidal at the age of 7. She would get so tense that her neck muscles would be like marbles, and she would scream when she tried to move. When taken to the hospital, they would put her on Valium and Codeine to calm her down and relax her. I fortunately found a good psychiatrist to help her. One of the first things he instructed was to get fish tanks and fill them with slow moving fish. I put 7 tanks, of varying sizes, throughout our home, filled with guppies, goldfish, and numerous other fish that didn't dart and shoot around in the water. They were in every room in the house, except for the laundry room. Partially due to the body language lessons of my animal companions, I

could quickly recognize when my girl would start to show signs of stress, so, I would tell her to go watch the fish. She would plop down in front of whichever tank suited her at the time, prop her little chin in her hands, and watch the fish...and calm down...take deeper breaths...and relax. She would, at times, cuddle with and talk to the kitten or our big, old, loving dog. After we brought the fish into our home, I never again had to rush her to the hospital to be drugged up on Valium and Codeine. I'm sure that her sessions with the Doctor had something to do with it, but I credit the fish for helping to ease her anxiety, and the dog and cat for helping with her depression. The Doctor recommended the fish and shared with my girl how well her pets could listen, without judgement, to her fears and thoughts. This was in 1987. To this day, she still has pets and loves to watch fish. She still has an issue with depression, but stays on top of it with activity, her family, and her pets.

After college, we moved to Alaska and I became a zookeeper at the Alaska Zoo for 5 years, working with every animal in the zoo. People are so fascinated by animals, and I saw many who would just come to the zoo to stroll around and relax, watching their favorite animals for, sometimes, hours. Official therapy? Probably not, but possibly unofficial...

After the zoo, I started working on wheelchairs and became a Rehab Specialist. I designed wheelchairs and seating systems to suit varied clients with disabilities. Many of these clients had service and therapy dogs. Some depended on the dogs quite extensively. The dogs could pick up things for them, open doors for them, warn them if they were going to have a seizure, or comfort them if they started getting anxious. I'm sure that the dogs had many more abilities that I didn't see, and they seemed invaluable to their people.

When I started teaching, I eventually got a job working with emotionally disturbed (ED) boys, at a residential treatment center. Some of these boys had been very abused, were angry or scared, and didn't like any kind of physical contact. Every day, one or more of them would become so frustrated, angry, or anxious that they would blow up and storm out of class. Some would just sit and do nothing, staring blankly at nothing. Then, with the director's approval, I introduced them to Belle.

Belle is a tiny, 9-pound, miniature dachshund, with a calm disposition and a very loving nature. She is a tri-color merle, black and grey, with red trim. She has extremely soft fur. Due to past circumstances, I've been diagnosed with PTSD, and she's my service dog. She calms me down when nothing else can. I thought that if she could do that for me, maybe she could help some of my students.

From the day that I started bringing Belle to school, things changed. If a boy started stressing out or getting angry, she would go to them or they would go to her, they would start petting her and/or talking to her, and they would calm down. You could watch their body relax as they sat there. Some would just put her on their lap and go back to work on their keyboard, reaching down occasionally to pet her, then continue working. The process of blowing up and blowing out of class came to an almost complete stop. If I didn't bring her for a few days, for whatever reasons, the stress and anger would start building up and some boys would start leaving class again. As soon as she came back, though, they would calm down and stay in class. Her calmness, the way she lays her head on your heart, and the tactile experience of her soft, soft fur

just calms one down. It works for me and it worked for my students. Unfortunately, after 3 semesters, there was an inspection of our facility and one of the CEOs objected to Belle's presence. She was worried about one of the boys getting bitten and resulting lawsuits. Even though the director of our facility argued on Belle's and the boys' behalf, even though it was shown that Belle was a service dog with all paperwork in order, the CEO stated that she was my service dog and not a therapy dog for the boys. The main hospital decided that she could no longer be allowed at the school.

As Belle is my licensed Service dog, I could fight and win this battle. However, if I do that, they will request a new teacher be assigned to my students, and I can't let my students down like that. I'm so busy with my students that I don't have time to stress about anything but them. I haven't given up on Belle being able to go back to school; I just need to present strong justification to convince the CEO of her value to our students.

Last fall, I received an e-mail about a local equine therapy program that was starting a group session. I forwarded the information to our director and the staff therapists. They chose 9 students to participate in the 5-week session. They went to the equine facility every Saturday, for 2 hours. As I went to all of the sessions, I was able to talk to the three therapists several times. I was curious about what they expected and what they saw. Did the boys relax? Did they open up to the horses? Did they become more open to their participating peers? Were there reports of any changes in behavior away from the therapy? There were usually the same 8 horses loose in a small pasture or in the indoor arena.

There were 3 miniature ponies, one small donkey, and 4 average sized horses. The students would go into the area with the horses and the therapists, talk to the therapists for a few minutes, then spread out; some moving closer to the horses and others, at least in the first 2 sessions, staying well away from them.

The first hurdle for the students to get over involves the sheer size and strength of the horses. This can be intimidating to anyone, especially someone fearful or unused to horses. The fact that the students can overcome their fears or anxieties and learn to work and communicate with these massive animals builds self-confidence and helps the students see that they can also face tough situations in life (Karol, 2007). One of my students was initially terrified. In the first session, he touched a horse with the tip of one finger, one time. He busied himself with taking notes and drawing the barn, staying well away from the horses for the rest of that session. The next session, he touched a horse with the fingertips of one hand, a few times. In the third session, he was openly petting his favorite horse and even hugged its neck a time or two. He couldn't stay away from his buddy for the rest of the sessions.

The students also have to learn to be aware of the actions, movements, and mannerisms of the horses. They need to pay attention to the horses, at all times, primarily because of their strength and size. No day-dreaming allowed! A person must stay in the present, because that's all a horse knows, and it will react to anything going on in the present. Our tallest student is around 6'2" and is easily startled. The constant movement of the horses made him uncomfortable, but there was a miniature pony that would stay off by itself, and he started

hanging out with the pony. They became comfortable around each other and were together quite a bit.

Matching horses and people is a process, as horses have individual personalities, just like people, and like people, aren't going to like everyone. Similar personalities will generally gravitate toward each other. Some are more receptive than others, and the students must learn how to calm down and relax. If they can do that, the horse will be calm and relaxed, and both will be more receptive of their growing communication. One of our students is very upbeat, with a lot of energy. He can be calm, when needed, and quickly made friends with one of the bigger horses. In the 4<sup>th</sup> session, the student was petting the horse and feeding it a handful of hay. He started to walk away, and the horse followed him. When the student turned around, the horse bumped him in the chest with its nose, and the student laughed and started moving backwards. The horse followed. When the student increased his speed, the horse did too. They ended up playing, with the student trotting backwards and the horse trotting with him. This was the 4<sup>th</sup> time that this student had ever been around a horse, yet he had gained enough confidence to play with the giant creature!

The results were subtle, but noticeable. A facility therapist noted that most of the students acted calmer and had more self-confidence when dealing with others. They were more relaxed and less apt to get upset or angry. Depression lessened. At this point, the participating students have generally maintained their calmness and self-confidence. Without contact with the horses, depression in some became more evident. The director is now considering having a horse on the premises.

With this meta-synthesis, I will investigate the following questions:

1. Does Animal Assisted Therapy help those affected by psychiatric disorders?
2. Do some therapies seem more effective than others?
3. With the lengthy history of Animal Assisted Therapy, why hasn't more research been done on its effectiveness?

### *1.3. The purpose of this meta-synthesis*

This meta-synthesis focused on research of Animal Assisted Therapy, of varied types, reviewing articles that were based on test groups, and the resulting data. Part of that focus was on which therapies are more successful. Another part was the investigation process: classifying each article, identifying the testing methods and those involved, and summarizing the resulting data of each article. I want to find out if Animal Assisted Therapy is truly a successful method of treatment, backed by research and study.

## **2. Methods**

### *2.1. Selection criteria*

The 45 articles included in this meta-synthesis met the following selection criteria:

1. The articles explored research of Animal Assisted Intervention and its impact on people with psychiatric disorders.
2. The articles explored varied types of Animal Assisted Intervention.
3. The articles explored Health Care professionals' interest in and use of Animal Assisted Intervention.

4. The articles were published in peer reviewed journals that focused on Animal Assisted Intervention.
5. The articles were published between 2001 and 2017.

## *2.2. Search procedures*

Database searches and ancestral searches were used to locate articles for this meta-synthesis.

### *2.2.1. Database searches*

I utilized Boolean searches within the Egan Library Educational Resources Information Center (ERIC) and Ebscohost, using these specific search terms:

1. (“Animal Therapy”) AND (“Children”) AND (“PTSD< Depression”)
2. (“Animal Assisted Therapy”) AND (“Children”) AND (“PTSD, Depression”)
3. (“Animal Assisted Therapy”) AND (“PTSD”)
4. (“Animal Assisted Therapy”) AND (“PTSD”) AND (“Research Articles”)
5. (“Service Animals”) AND (“PTSD”)
6. (“Animal Assisted Intervention”) AND (“PTSD”) AND (“Adolescents”)
7. (“Animal Assisted Intervention”) AND (“Depression”) AND (“Adolescents”)
8. (“Animal Assisted Intervention”) AND (“Horses”)
9. (“Animal Assisted Intervention”) AND (“Canine”)
10. (“Animal Assisted Intervention”) AND (“Feline”)
11. (“Animal Assisted Intervention”) AND (“Small Animal”)

These searches yielded 40 articles: (Antonioli & Reveley, 2005; Bachi, 2012; Balluerka, Muela, Amiano, & Caldentey, 2015; Berget, Grepperud, Aasland, & Braastad, 2013; Bert, Gualano, Camussi, Pieve, Voglino, Siliquini, 2016; Brooke, & Myers, 2015; Burgon, 2011; Earles, Vernon, & Yetz, 2015; Frederick, Ivey Hatz, & Lanning, 2015; Geist, 2011; Glintborg, & Hansen, 2017; Glossary, AAI International, [aai-int.org/aai/glossary-of-terms](http://aai-int.org/aai/glossary-of-terms); Grajfoner, Harte, Potter, & McGuigan, 2017; HABRI | Mental Health and Wellness; Hoagwood, Acri, Morrissey, & Peth-Pierce, 2017; Hoffmann, Lee, Wertenaue, Ricken, Jansen, Gallinat, & Lang, 2009; Holden, (2016); Jalongo, 2015; Kelly, & Cozzolino, 2015; Kemp, Signal, Botros, Taylor, & Prentice, 2014; Krause-Parello, & Gulick, 2015; Maber-Aleksandrowicz, Avent, & Hassiotis, 2016; Mangalavite, 2014; McKinney, Dustin, & Wolff, 2001; Mueller, & McCullough, 2017; O'Callaghan, & Chandler, 2011; O'Haire, Guérin, & Kirkham, 2015; Risley-Curtiss, Rogge, & Kawam, 2013; Risley-Curtiss, 2010; Reynolds, 2012; Satiansukpong, Pongsaksri & Sasat, 2016; Schaefer, 2002; Snyder & Tielsch Goddard, & Gilmer, 2015; Siebert, 2016; Stefanini, Martino, Allori, Galeotti, & Tani, 2015; Stewart, Dispenza, Parker, Chang, & Cunnien, 2014; Tielsch Goddard & Gilmer, 2015; Tomaszewska, Bomert, & Wilkiewicz-Wawro, 2017; Turner, 2017; Wipatayotin, (2008); Yorke, Nugent, Strand, Bolen, New & Davis, 2013)

### 2.2.2. *Ancestral searches*

I utilized the ancestral search by looking at the reference lists of previously published articles. They yielded 5 additional articles that also met my selection criteria: (Carroll, (2016); Dilts, Trompisch, & Bergquist, 2011; Dietz, Davis, & Pennings, 2012; Fine, 2006; Hamama, Hamama-Raz, Dagan, Greenfeld, Rubinstein, & Ben-Ezra, 2011)

### *2.3. Coding procedures*

I used a coding form to categorize the information presented in each of the 40 articles. This coding form was based on: (a) publication type; (b) research design; (c) participants; (d) data sources; and (e) findings of the studies.

#### *2.3.1. Publication types*

Each article was classified according to the type of publication it represented. Research Studies gather quantitative and/or qualitative data by using a formal research design. Review articles explore existing data from completed studies. Guides give us explanatory material about varied words, procedures, and methodologies that pertain to the subject. Literature reviews look at various publications and their implications for the subject.

#### *2.3.2. Research design*

Each study was also classified by research design. Quantitative research uses mass studies or surveys to gather data. Qualitative research utilizes smaller groups to explore the studies with more information about individuals. Mixed methods use both qualitative and quantitative methods.

#### *2.3.3. Participants, data sources, and findings*

I identified the participants of each study in each article, identified which data sources were used, and gave summaries of the results. (Table 2)

#### *2.4. Data analysis*

I analyzed my articles by reviewing the subject matter of each study.

### **3. Results**

#### *3.1. Publication type*

I found 44 articles that included information pertaining to my subject. The publication type of every article is in Table 1.

**Table 1**

<b>Author(s) &amp; Year of Publication</b>	<b>Publication Type</b>
Antonioli & Reveley, 2005	Research Article
Bachi, 2012	Review Article
Balluerka, Muela, Amiano, & Caldentey, 2015	Research Article
Berget, Grepperud, Aasland, & Braastad, 2013	Review Article
Bert, Gualano, Camussi, Pieve, Voglino, Siliquini, 2016	Review Article
Brooke, & Myers, 2015	Research Article
Burgon, 2011	Research Article
Carroll, 2016	Review Article
Dietz, Davis, & Pennings, 2012	Research Article
Dilts, Trompisch, & Bergquist, 2011	Research Article
Earles, Vernon, & Yetz, 2015	Research Article
Fine, 2006	Review Article
Frederick, Ivey Hatz, & Lanning, 2015	Research Article
Geist, 2011	Review Article
Glintborg, & Hansen, 2017	Research Article
Glossary, AAI International	Guide
Grajfoner, Harte, Potter, & McGuigan, 2017	Research Article
HABRI   Mental Health and Wellness	Review Article
Hamama, Hamama-Raz, Dagan, Greenfeld, Rubinstein, & Ben-Ezra, 2011	Research Article
Hoagwood, Acri, Morrissey, & Peth-Pierce, 2017	Review Article
Hoffmann, Lee, Wertenuer, Ricken, Jansen, Gallinat, & Lang, 2009	Research Article

Holden, L, 2016	
Karol, 2007	Review Article
Kelly, & Cozzolino, 2015	Review Article
Kemp, Signal, Botros, Taylor, & Prentice, 2014	Research Article
Krause-Parello, & Gulick, 2015	Research Article
Maber-Aleksandrowicz, Avent, & Hassiotis, 2016	Review Article
McKinney, Dustin, & Wolff, 2001	Review Article
Mueller, & McCullough, 2017	Research Article
O'Callaghan, & Chandler, 2011	Research Article
O'Haire, Guérin, & Kirkham, 2015	Review Article
Risley-Curtiss, Rogge, & Kawam, 2013	Research Article
Risley-Curtiss, 2010	Research Article
Reynolds, 2012	Research Article
Satiansukpong, Pongsaksri& Sasat, 2016	Research Article
Schaefer, 2002	Review Article
Siebert, 2016	Review Article
Snyder & Tielsch Goddard, & Gilmer, 2015	Research Article
Stefanini, Martino, Allori, Galeotti, & Tani, 2015	Research Article
Stewart, Dispenza, Parker, Chang, & Cunnien, 2014	Research Article
Tielsch Goddard & Gilmer, 2015	Review Article
Tomaszewska, Bomert, & Wilkiewicz-Wawro, 2017	Review Article
Turner, 2017	Review Article
Yorke, Nugent, Strand, Bolen, New& Davis, 2013	Research Article

### *3.2. Research design, participants, data sources, and findings of the studies*

I found 24 research articles that met my criteria: (Antonioli & Reveley, 2005; Balluerka, Muela, Amiano, & Caldentey, 2015; Brooke, & Myers, 2015; Burgon, 2011; Dietz, Davis, & Pennings, 2012; Dilts, Trompisch, & Bergquist, 2011; Earles, Vernon, & Yetz, 2015; Frederick, Ivey Hatz, & Lanning, 2015; Glintborg, & Hansen, 2017; Grajfoner, Harte, Potter, & McGuigan, 2017; Hamama, Hamama-Raz, Dagan, Greenfeld, Rubinstein, & Ben-Ezra, 2011; Hoffmann, Lee, Wertenaue, Ricken, Jansen, Gallinat, & Lang, 2009; Kemp, Signal, Botros, Taylor, & Prentice, 2014; Krause-Parello, & Gulick, 2015; Mueller, & McCullough, 2017; O'Callaghan, & Chandler, 2011; Risley-Curtiss, Rogge, & Kawam, 2013; Risley-Curtiss, 2010; Reynolds, 2012; Satiansukpong, Pongsaksri & Sasat, 2016; Snyder & Tielsch Goddard, & Gilmer, 2015; Stefanini, Martino, Allori, Galeotti, & Tani, 2015; Stewart, Dispenza, Parker, Chang, & Cunnien, 2014; Yorke, Nugent, Strand, Bolen, New & Davis, 2013). The research design, participants, data sources, and findings of these studies will be found in Table 2.

**Table 2**

<b>Authors</b>	<b>Research Design</b>	<b>Participants</b>	<b>Data Sources</b>	<b>Findings</b>
Antonioli & Reveley, 2005	Qualitative	30 Outpatients recruited through announcements on the internet, radio, newspapers, and hospitals.	Hamilton Rating Scale for depression, Beck depression inventory, Zung self-rating anxiety scale, all pre and post-treatment	The therapy was effective in alleviating symptoms of depression after two weeks of treatment. Animal facilitated therapy with dolphins is an effective treatment for mild to moderate depression, which is based on a holistic approach, through interaction with animals in nature.
Balluerka, Muela, Amiano, & Caldentey, 2015	Qualitative	63 youths, average age of 15 years, divided into a treatment group of 39 (19 female and 20 male), and a control group of 24 (5 female and 19 male)	Pre and post test measures and observation criteria	Treatment group showed decrease in hyperactivity, increased adaptive skills, higher school adjustment. The treatment group developed better social skills and self-esteem.
Brooke, & Myers, 2015	Quantitative Qualitative	21 Mental health professionals and varied clients	Data from treatments and studies	Art, play, music, dance/movement, drama, and animals can be therapeutic modalities in clinical work with depression

<b>Authors</b>	<b>Research Design</b>	<b>Participants</b>	<b>Data Sources</b>	<b>Findings</b>
Burgon, 2011	Qualitative	5 girls and 2 boys, ages 11-21, 9 horses	Qualitative, participative, and reflexive ethnography and interviews	Participants gained better ability to reflect, social competence, empathy, sense of purpose and future, and mastery, autonomy and self-efficacy, self-confidence and self-esteem
Dietz, Davis, & Pennings, 2012	Quantitative	153 children, between the ages of 7 and 17, with confirmed sexual abuse.	Pre and post-trauma symptom inventory, demographic and abuse-related data	AAT is an effective treatment modality for the majority of children who have been sexually abused, and can augment cognitive-behavioral, trauma-focused cognitive-behavioral, or play therapies.
Dilts, Trompisch, & Bergquist, 2011	Qualitative	19 female and 18 male children	Behavior Dimensions Rating Scale (BDRS) Parent Report Form	Problem behaviors reduced, and participants became more socially or verbally expressive and relaxed.
Earles, Vernon, & Yetz, 2015	Qualitative	12 females and 4 males of varied ages, with a score of 31 or above on the PTSD Checklist-Specific, recruited through mental health practitioners	Pre and post-treatment questionnaires	Participants' PTSD symptoms, emotional distress, anxiety, depression, and alcohol use decreased significantly after program participation; mindfulness increased.

<b>Authors</b>	<b>Research Design</b>	<b>Participants</b>	<b>Data Sources</b>	<b>Findings</b>
Frederick, Ivey Hatz, & Lanning, 2015	Qualitative	9 males and 17 females, all junior high and high school ages.	Data from the Adolescent Domain-Specific Hope Scale and the Major Depression Inventory, pre, during, and post intervention.	Positive impact of equine assisted learning shown by scales of increasing levels of hope and decreasing levels of depression.
Glintborg, & Hansen, 2017	Qualitative	“Helen” a volunteer with PTSD and a service dog	Interview	A therapy animal’s presence can reduce anxiety, cause positive emotions, and improve social interaction.
Grajfoner, Harte, Potter, & McGuigan, 2017	Quantitative	132 university students, seven therapist dogs and their handlers	Warwick–Edinburgh Mental Well-Being Scale (WEMBS), the State Trait Anxiety Scale (STAI), and the UWIST Mood Adjective Checklist (UMACL), pre and pro-intervention	Improvements in anxiety, mood, well-being, and stress after therapy dog intervention

<b>Authors</b>	<b>Research Design</b>	<b>Participants</b>	<b>Data Sources</b>	<b>Findings</b>
Hamama, Hamama-Raz, Dagan, Greenfeld, Rubinstein, & Ben-Ezra, 2011	Qualitative	18 girls, ages 14-16, with a history of physical or sexual abuse.	Self-report questionnaires given pre and post-study.	The intervention group showed decreased levels of PTSD, higher levels of subjective well-being, and lower levels of depressive symptoms.
Hoffmann, Lee, Wertenaue, Ricken, Jansen, Gallinat, & Lang, 2009	Qualitative	12 acutely depressed patients, 6 males and 6 females	State-Trait Anxiety Inventory (STAI) self-report, administered pre and post-treatment	Findings suggest that animal-assisted therapy can cause highly significant reductions of anxiety and enhance psychotherapeutic strategies and motivation of both patients and therapists.
Kemp, Signal, Botros, Taylor, & Prentice, 2014	Qualitative	6 boys and 9 girls, aged 8-11 years and 15 adolescent girls, aged 12-17 years	Data at 3 points in time: Intake into service and pre-Equine Facilitated Therapy (EFT); After 6 weeks of in-clinic counselling; Post-EFT after 9-10 weeks.	Significant improvements in functioning were found between pre and post-EFT assessment across all psychometric measures and for both age groups.

<b>Authors</b>	<b>Research Design</b>	<b>Participants</b>	<b>Data Sources</b>	<b>Findings</b>
Krause-Parello, & Gulick, 2015	Qualitative	40 females and 2 males, with age ranges of 5-14 years	Standard and AAI forensic interviews. Pre and post-interview saliva samples and BP/HR measurements.	Utilizing AAI intervention during forensic interviews reduces psychological and physiological distress for a child who has experienced sexual abuse.
Mueller, & McCullough, 2017	Qualitative	68 adolescents, ages 10-18, with 36 in the treatment group and 32 in the control group.	Observation and resulting data from 10 weekly 2 hour sessions, comparing changes in post-traumatic stress symptoms.	Equine assisted therapy may be an effective additional treatment for PTSD, but isn't more effective than traditional based therapy.
O'Callaghan, & Chandler, 2011	Qualitative	31 Licensed mental health professionals in the US who practiced AAT, recruited from Delta Society Organization, UNT Center for AAT, and Yahoo's AAT Online Professional group.	Survey inquiries via mail and e-mail. 18 techniques and 10 intentions were rated, with frequencies and percentages used to analyze data.	Therapy animals are utilized in the therapeutic process in varied ways and can be important tools for working with clients who have issues establishing a therapeutic relationship with a human therapist.

<b>Authors</b>	<b>Research Design</b>	<b>Participants</b>	<b>Data Sources</b>	<b>Findings</b>
Risley-Curtiss, Rogge, & Kawam, 2013	Quantitative.	1,262 U.S. NASW members	Survey with 19 questions	Positive animal/human relationships and the correlation between animal abuse and other antisocial behaviors should be explored by those in the social work profession.
Risley-Curtiss, Zilney, Hornung 2010	Quantitative	Public child welfare agencies in 45 states and the District of Columbia	23-item survey	There is growing interest in integrating Animal Human Relationships into child protection work.
Reynolds, 2012	Qualitative	Psychiatrists and patients	Physiological tests and resulting data.	More replicated/longitudinal studies are needed, along with consistent interpretation of resulting data.
Satiansukpong, Pongsaksri& Sasat, 2016	Qualitative	16 children with Down Syndrome, grades 1-6, divided into 2 equal groups, one control group and one experimental group	Balance subtest of the Bruininks-Osteretsky Test of Motor Proficiency, postural control record form, and Beery VMI (visual motor integration)	TETP-D improved VMI but did not improve balance or postural control within the time span of 2-1-hour sessions, 2x/week, for 2 months.

<b>Authors</b>	<b>Research Design</b>	<b>Participants</b>	<b>Data Sources</b>	<b>Findings</b>
Snyder & Tielsch, Goddard, & Gilmer, 2015	Qualitative	Varied authors	Database search	Research/reports have shown that animals help to decrease anxiety and pain, initiate conversation, lead discussion, or break communication barriers.
Stefanini, Martino, Allori, Galeotti, & Tani, 2015	Qualitative	34 hospitalized children and adolescents,	Children Global Assessment Scale and a rating scale of care and attendance	Statistically significant improvement in global functioning, reduction in format of care, and increased school attendance in the treatment group
Stewart, Dispenza, Parker, Chang, & Cunnien, 2014	Qualitative	55 Undergraduate student volunteers, from a small liberal arts college that presented 62.3% female, 37.7% male, with a mean age of 21 years	Pre and post-test measures, session rating and evaluation forms	Students felt less anxious after time with a therapy dog and handler. Student scores on loneliness were significantly lower after participation than before participation.
Yorke, Nugent, Strand, Bolen, New & Davis, 2013	Qualitative	4 Children, aged 8-10 years, 4 Therapy riding horses	ABCBA single case design, with multiple baseline elements	This may be useful for traumatized children who are neuro-physiologically injured, by allowing contact with another living being that calms through touch, proximity, and the development of trust. Further investigation is warranted.

### 3.2.1. *Research design*

Of the 24 studies that I used, 19 studies (79%) used a qualitative research design (Antonioli & Reveley, 2005; Balluerka, Muela, Amiano, & Caldentey, 2015; Burgon, 2011; Dilts, Trompisch, & Bergquist, 2011; Earles, Vernon, & Yetz, 2015; Frederick, Ivey Hatz, & Lanning, 2015; Glintborg, & Hansen, 2017; Hamama, Hamama-Raz, Dagan, Greenfeld, Rubinstein, & Ben-Ezra, 2011; Hoffmann, Lee, Wertenaue, Ricken, Jansen, Gallinat, & Lang, 2009; Kemp, Signal, Botros, Taylor, & Prentice, 2014; Krause-Parello, & Gulick, 2015; Mueller, & McCullough, 2017; O'Callaghan, & Chandler, 2011; Reynolds, 2012; Satiansukpong, Pongsaksri & Sasat, 2016; Snyder & Tielsch, Goddard, & Gilmer, 2015; Stefanini, Martino, Allori, Galeotti, & Tani, 2015; Stewart, Dispenza, Parker, Chang, & Cunnien, 2014; Yorke, Nugent, Strand, Bolen, New & Davis, 2013). Four of the studies (17%) utilized a quantitative research design (Dietz, Davis, & Pennings, 2012; Grajfoner, Harte, Potter, & McGuigan, 2017; Risley-Curtiss, Rogge, & Kawam, 2013; Risley-Curtiss, Zilney, Hornung 2010). One of the studies (.04%) used both research designs.

### 3.2.2. *Participants and data sources*

63% of the research articles that I have included in this meta-synthesis focused on children and adolescents, 60% of those experiencing effects of earlier trauma, working with therapists who utilize AAI (Balluerka, Muela, Amiano, & Caldentey, 2015; Burgon, 2011; Dietz, Davis, & Pennings, 2012; Dilts, Trompisch, & Bergquist, 2011; Frederick, Ivey Hatz, & Lanning, 2015; Grajfoner, Harte, Potter, & McGuigan, 2017; Hamama, Hamama-Raz, Dagan, Greenfeld, Rubinstein, & Ben-Ezra, 2011; Kemp, Signal, Botros, Taylor, & Prentice, 2014; Krause-Parello, & Gulick, 2015; Mueller, & McCullough, 2017; Satiansukpong, Pongsaksri & Sasat, 2016; Snyder

& Tielsch Goddard, & Gilmer, 2015; Stefanini, Martino, Allori, Galeotti, & Tani, 2015; Stewart, Dispenza, Parker, Chang, & Cunnien, 2014; Yorke, Nugent, Strand, Bolen, New & Davis, 2013).

16% of the research articles involved children and adults, 50% of whom were experiencing effects of earlier trauma, working with varied health professionals who utilize AAI (Antonioli & Reveley, 2005; Brooke, & Myers, 2015; Earles, Vernon, & Yetz, 2015; Reynolds, 2012).

21% of the research articles involved adult patients, 20% of those experiencing effects of trauma, mental health professionals, and child welfare professionals (Glintborg, & Hansen, 2017; Hoffmann, Lee, Wertenaue, Ricken, Jansen, Gallinat, & Lang, 2009; O'Callaghan, & Chandler, 2011; Risley-Curtiss, Rogge, & Kawam, 2013; Risley-Curtiss, 2010).

7 of the studies involved equine assisted intervention, 14 studies involved canine assisted intervention, 2 involved dolphin assisted intervention, and 1 involved elephant assisted intervention.

### *3.2.3. Findings of the studies*

The 24 research articles that have been included in this meta-thesis can be summarized as follows:

1. Based on the results of my research, AAI can help people suffering from depression and PTSD. Evidence has been shown that cortisol levels decrease when a person has had therapeutic interaction with animals (York, et al, 2013). Numerous studies remarked on lower blood pressure, a lower heart rate, and a calmer sense of self. Evidence shows that the majority of those included in the interventions became more

2. accepting of someone outside of themselves, which leads to better personal and social interactions. 99% of the studies showed results in reduction of anxiety, fear, depression, and PTSD symptoms.
3. Different therapies suit different psychological and psychophysical needs, and the size, availability, or location of the therapy animal can also be a factor.

Equine Assisted Interventions helps with becoming more aware of self and surroundings, learning to live in the moment, and more contact and communication with others. It has been shown to lower blood pressure, heart rate, stress, and symptoms of anxiety and depression.

Canine Assisted Interventions have shown to help reduce anxiety, loneliness, and depression, and give an increased sense of comfort, security, self-esteem, and confidence.

Dolphin Therapy has been shown to help with depression, along with physiological issues, but in the United States, it's primarily utilized in Florida and Hawaii.

Elephant therapy is shown to help children with Autism and Down Syndrome both psychologically and physiologically, but it's only being used in Thailand, where human/elephant interaction is common.

4. There has been much research on the effectiveness of Animal Assisted Intervention. Unfortunately, those professionals who have obtained data on this research have done it in different ways, without others validating their research and

5. outcomes by using the same methods, procedures, and data interpretation. In their defense, though, the lack of general published protocols that guide implementation of treatment procedures doesn't allow for validation.

### *3.3. Emergent themes*

I deduced 6 themes from my study of the 45 articles included in this meta-synthesis. The emergent themes follow: (a) interest improves attendance, (b) active involvement can encourage movement and participation, (c) may show physiological improvement, (d) may show psychological improvement (e) may lead to more involved social behavior, (f) need for more research. The 6 emergent themes and the formulated meanings are represented in Table 3.

**Table 3**

<b>Emergent Themes</b>	<b>Formulated Meanings</b>
<p><b>Interest Improves Attendance</b></p>	<ul style="list-style-type: none"> <li>• As AAI isn't common, people are interested out of curiosity.</li> <li>• The majority of participants went to every class.</li> <li>• Most people like animals.</li> <li>• The human-animal bond has existed for thousands of years.</li> <li>• The human-animal bond may positively influence the health and well-being of both.</li> <li>• There is an emotional interaction of the person, the animal, and the environment.</li> <li>• There is psychological interaction involving the person, the animal, and the environment.</li> <li>• Therapy animals accept people regardless of how they look.</li> <li>• Therapy animals accept people regardless of disabilities.</li> <li>• Therapy animals are only concerned with the present, not the past.</li> </ul>

<b>Emergent Themes</b>	<b>Formulated Meanings</b>
<b>Active Involvement Can Encourage Movement and Participation</b>	<ul style="list-style-type: none"><li>• There is physical interaction involving the participant, the animal, and the environment.</li><li>• A non-stressful environment should be provided for the participant.</li><li>• A non-judgmental environment should be provided for the participant.</li><li>• The participant will physically have to move.</li><li>• The participant may stretch farther.</li><li>• The participant may exercise longer.</li><li>• With some of the therapies, the participant must move with the animal.</li><li>• There is motivation for faster physical recovery of lost movement.</li><li>• Self-consciousness can be reduced, allowing for better participation.</li><li>• Self-confidence can be improved, allowing for better participation.</li></ul>

<b>Emergent Themes</b>	<b>Formulated Meanings</b>
<b>May Show Physiological Improvement</b>	<ul style="list-style-type: none"> <li>• Participants present lower resting heart rates around familiar animals.</li> <li>• The tactile experience of petting an animal lowers blood pressure.</li> <li>• Cortisol levels decrease, reducing anxiety and depression.</li> <li>• The endorphin oxytocin rises, increasing the feelings of happiness and trust.</li> <li>• Increase of oxytocin increases the body's ability to grow new cells and promote healing.</li> <li>• Abilities to move can be improved within the person's capabilities.</li> <li>• Joint movement can be improved, allowing for more flexibility and less pain.</li> <li>• Recovery time for injury can be decreased.</li> <li>• Motor skills may be maintained or increased.</li> <li>• Core strength may improve.</li> <li>• Better body awareness can be developed.</li> <li>• Muscle memory can be developed.</li> </ul>

<b>Emergent Themes</b>	<b>Formulated Meanings</b>
<b>May Show Psychological Improvement</b>	<ul style="list-style-type: none"> <li>• Anxiety levels have been shown to decrease.</li> <li>• Feeling of loneliness is generally reduced.</li> <li>• Feelings of alienation may be reduced.</li> <li>• Fearfulness may be decreased.</li> <li>• The levels of depression have been shown to reduce.</li> <li>• Better focus has been reported improved for the participant.</li> <li>• The person may become more aware of self and surroundings.</li> <li>• Speech disorders have been shown to improve for some people.</li> <li>• Emotional disorders have been shown to generally improve.</li> <li>• The ability to feel empathy for others may be improved.</li> <li>• Processing abilities may be developed or show improvement.</li> <li>• The ability to follow directions may improve.</li> </ul>

<b>Emergent Themes</b>	<b>Formulated Meanings</b>
<b>May Lead to More Involved Social Behavior</b>	<ul style="list-style-type: none"><li>• Interaction between animals and people seems to support social interactions.</li><li>• People have shown improvement of their communication skills.</li><li>• Some people may show more acceptance of physical contact.</li><li>• A person's socialization skills may show improvement.</li><li>• Smiling behaviors of those involved have been shown to increase.</li><li>• Laughing behaviors of those involved have been shown to increase.</li><li>• Better eye contact has been observed among those reluctant to look at someone else.</li><li>• Verbalization has been known to develop or improve.</li><li>• Self-discipline has been shown to improve.</li><li>• Tolerance for the frustrations of others has been shown to improve.</li></ul>

<b>Need for More Research</b>	<ul style="list-style-type: none"><li>• The biophilia hypothesis is a theory.</li><li>• AAI has not been proven a credible science.</li><li>• Most studies have a small sample of participants.</li><li>• Some studies have not considered how the animal handler affects the participant.</li><li>• Insurances will not cover the costs of service dogs due to lack of scientific evidence showing proof of their effect.</li><li>• The long-term effectiveness of AAI has not been studied.</li><li>• Many professionals are reluctant to use AAI due to lack of scientific evidence.</li><li>• More specific research is required.</li><li>• Most of the clinical trials are seen to be flawed due to the methods utilized.</li><li>• There is not a standard protocol established for AAI research.</li><li>• Lack of a standard protocol does not allow for replication of the research, which could support the data studied.</li></ul>
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#### **4. Discussion**

In this section, I will summarize the emergent themes that I perceived from the analysis of the 45 articles that I found for this meta-synthesis. I will then share how I plan to utilize this knowledge in my practice as a special education teacher for boys with a diagnosis of ED (emotional disorders).

##### *4.1. Interest improves attendance*

Many children in today's world are presented with varied diagnoses. The effects of these illnesses can include depression, anxiety, a lack of happiness or trust, health issues, and difficulty with social situations, to name a few. The above can lead to a child's reluctance to participate in unfamiliar activities, with unfamiliar people. Therapeutic activities involving animals isn't a common thing and curiosity may decrease that child's reluctance. The human-animal bond has been in existence for thousands of years. An American biologist, Edward Wilson, developed the Biophilia Hypothesis, which claims that humans have a built-in need to affiliate with other living beings. Though this hypothesis hasn't been proven, the fact is that most children seem to like interaction with animals. Therapy animals are non-judgmental and accept the children as they are, regardless of how they look or their disabilities. They're only concerned with the present, not the past. There are positive physiological and psychological interactions between the child, the animal, and the environment that they share. Due to the above, the participants in the AAI studies were enthused about the interaction with the therapy animals, and rarely missed a session.

The above statements support the involvement of therapy animals in the classroom. Small animals, fish, or a dog could be positive influences on my students. I would involve my students in the care of the animals to help them learn about responsibility and encourage interaction with the animals, when needed. I would like to include a therapy dog in the classroom, unless a student is allergic or fearful of animals. If that is the case, I would hope to have the ability to allow the other students to interact with the therapy dog on a regular basis, away from those with allergies or fears. Small animals, like hamsters, rabbits, or guinea pigs could be included under similar conditions. Fish tanks would help the students in some similar ways, though the fish would be helpful due to their movement and color in the water. Any of the above would make the classroom a more involved and interactive learning area.

#### *4.2. Active involvement can encourage movement and participation.*

Utilizing therapy animals allows physical interaction between the participant, the therapy animal, and the environment that they are in. The environment should be non-stressful for either the participant or the therapy animal. The participant should feel that he is in a non-judgmental space. Working with a therapy animal usually requires some movement, even if it's just petting their fur or watching their actions. Interaction with the therapy animal could include more physical movement than the participant is used to, though that may be an advantage as the participant will move more and possibly stretch more. If the participant is involved and enjoying the therapy, better movement could be a motivation for him. As the participant interacts with the therapy animal, he may gain self-confidence and reduce self-consciousness, allowing for better participation in activities.

I would utilize the therapy animals to improve the classroom environment for my students. Just the presence of therapy animals promotes calmness and a comfortable environment. If a therapy dog was present, varied students could take it on walks, increasing physical activity and a sense of wellness. Just the action of getting down on the floor to play with a small animal involves utilizing muscles that aren't normally utilized. As the student gains confidence with the non-judgmental animal, becoming more secure with his actions and abilities, he may show better, more confident participation in classroom activities.

#### *4.3. May show physiological improvement.*

The current studies have shown improvements in the physiological functions of participants of AAI. During and after interaction with therapy animals, resting heart rates and blood pressures have lowered. Cortisol levels tend to decrease, and oxytocin levels tend to rise. Due to the changes in these levels, anxiety and depression decrease and the feelings of happiness and trust increase. The body's ability to grow new cells and maintain health is improved, which allows a better recovery time for injuries. The ability to move can increase, within the participant's capabilities. Joint movement may improve, allowing more flexibility and less pain. Large and small motor skills can be maintained, or even increased. With possible improved core strength and better developed muscle memory, more body awareness will be developed.

The above is a definite plus in a classroom. Inclusion of the therapy animals could allow for calmer, happier, and healthier students, which should lead to better focus in the classroom. This, in turn, would result in better grades and more confidence in their own abilities. Their

improved physical conditions would result in more self confidence and less distraction due to discomfort. Depression levels would have to improve.

#### *4.4. May show psychological improvement*

Based on reviewed physiological reactions, interacting with therapy animals can reduce anxiety levels, along with feelings of loneliness and alienation. This can, in turn, aid with reduction of fearfulness and depression. A more positive outlook could allow the participant to become more self-aware and more in tune with his surroundings. This new awareness could allow for better focus on singular concepts and ideas. More interest would reduce any present boredom, as the participant is more interested in the environment around him. The interaction with the therapy animal can allow the participant to learn to empathize with the animal, thus helping him to empathize with other people. The more positive outlook and improved awareness could help his processing abilities, aiding with stabilizing emotions, improving speech, and better following of instruction.

I would utilize AAI with my students, allowing them access, if possible, to the therapy animals, when needed. The solitary student, with few friends, could be allowed more access, within reason. The presence of the animal, along with touch and the interaction, could calm a student down, increase his mood, and allow him to get on with his day. Through this interaction with the animal, he may develop friendships with peers who have a common interest in the animal. He could become more social and interactive in the classroom, gaining awareness of the environment

around him. This new awareness could help with improved focus and understanding of current classroom activities.

#### *4.5. May lead to more involved social behavior*

Current studies show that the interaction between a participant and a therapy animal can lead to the participant exhibiting better social interaction with people around him. Communication or verbalization skills could improve, and the participant may be more accepting of physical contact, where he may have avoided most in the past. More smiles and laughter could be apparent. The participant may have the confidence to look at his peers, rather than anything else that he could focus on. If a peer shows frustration and anger, the participant may be able to show tolerance for the upset, instead of joining in with the chaos.

With better social interaction and improved communication or verbalization, my students should exhibit better participation in the classroom. Some students get very anxious if someone gets too close to them and will physically pull away from any touch, so to learn to accept minor physical contact, through interaction with a therapy animal, would reduce stress and anxiety for him and those around him. If one of his peers happens to get frustrated and loud, hopefully he could show tolerance of the actions and noise around him, without joining in. Smiles and laughter are contagious, are welcome within reason, and make the classroom a more cheerful environment.

#### *4.6. Need for more research*

Though Edward Wilson's Biophilia Hypothesis sounds plausible, it is still just a hypothesis, and it, along with AAI, hasn't been proven credible due to the flawed methods utilized

in the clinical trials. Most of the studies involved small groups of participants; the effects of the animal handlers weren't always considered; long term effectiveness has not been addressed. As there is no standard protocol established for AAI research, replication of any of the studies is difficult, and replication of the research data is what is required for scientific proof. Many professionals will not utilize AAI due to this lack of proof. Insurances are reluctant to cover costs of AAI as the effects are not proven. More specific research is required.

Though I would like to utilize AAI in my classroom, until there is more proof of success, it is unlikely that I will get approval from current administration. I would also like to become involved in the research, just to try to help my students more. I'm due to start training with an Equine Therapy program, and I'm curious to see their approach to the standardized protocol required for verification of the data.

## **5. Conclusion**

The findings of this meta-synthesis show promise for the future of AAI. Granted, it has been utilized for centuries, but in a very haphazard way. There are those who are passionate about its usefulness but, due to lack of consistent and standardized evidence, there are also those who are not convinced. Until a standardized procedure is developed and utilized as standard protocol for all to follow, its usefulness, or lack of usefulness, cannot be proven to all parties' satisfaction. There are many studies and reviews that have been done through the years, but most have been done in different ways, and many of those used flawed methods in their research. There has not been enough quantitative research done, as most of the studies involved small groups of

participants. Long term effectiveness requires more quantitative studies and research. A standardized protocol must be developed so that replication of research data can be established. Evidence points to the possibility of AAI as a useful tool in physiological and psychological therapies, but until improved and standardized research methods are utilized, AAI will remain an unproven part of therapy.

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